

PATENT CLAIMS.

1. Device for a plug (12) for pressure testing of bore holes and the like in a
5 formation or the like and associated pipe in which the plug is installed in a plug-
carrying chamber, and the plug seals off the passage through the pipe by
cooperating with sealing bodies, as the underside of the plug is arranged
(rests) in a seat at the bottom of the chamber, characterised in that it
10 comprises a number of layer-formed or tier-formed ring disc elements of a
given thickness, the one fitted on top of the other.
2. Device according to claim 1, characterised in that a film or a sheet of a
material other than glass is inserted between the different layers of the plug to
15 obtain the required strength and toughness.
3. Device according to claims 1-2, characterised in that the inserted film
comprises a plastic film, a felt film, a paper film or the like.
4. Device according to claims 1-3, characterised in that the glass discs are
20 joined together by lamination with a binding agent such as a glue.
5. Device according to any of the preceding claims, characterised in that
the glass discs are hardened or brittle, so that one gets a simple and effective
mechanical crushing of the glass.
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6. Device according to any of the preceding claims, characterised in that
the glass is formed with a polished surface to obtain a satisfactory seal
between each glass disc and between the outer surfaces of the glass and the
metal of the inner wall of the pipe.
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7. Device according to any of the preceding claims, characterised in that
the glass plug is placed in a frame or a crib of a high-grade, softer material 37,
such as, for example, of a softer metal such as bronze to safeguard the plug
against damage from rough treatment.
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8. Device according to any of the preceding claims, characterised in that
one type of glass (32,34) accounts for the pressure sealing while another type

of glass (16,15) handles the pressure load as a consequence of the liquid pressure.

9. Device according to any of the preceding claims, characterised in that
5 the glass plug is arranged to be removed with the help of an explosive charge (40) which is fastened to the glass in, or on, the inside of the plug housing/pipe section.

10. Device according to any of the preceding claims, characterised in that
10 the explosive charge of the glass plug is arranged inside a separate glass disc (42) that lies on top of and close to the sealing end disc (32).

11. Device according to any of the preceding claims, characterised in that a
15 number of layers (X) are manufactured as disc-formed plates, and also upper and lower slanted plates(15,17.Y), and also that placed in each end of the plug are end-sections (32,34) which comprise their own sealing bodies comprising an O-ring (23,25) that forms the plug's sealing against the inner wall of the pipe (10) to prevent leaks.

20 12. Device according to any of the preceding claims, characterised in that the chamber (30) forms a corresponding slanted seat (18) for a reciprocally shaped seat top side of the plug that has an angle of contact with the seat of about 45°.

25 13. Device according to any of the preceding claims, characterised in that the sealing bodies (23,25) are arranged in connection with the inner wall of the pipe (10) above (upstream) and/or below (downstream) the chamber (30) and are arranged to form a seal against the respective cylindrical extensions (32,34) of the plug body (10) above and/or below the chamber.

30 14. Device according to any of the preceding claims, characterised in that each sealing body comprises a seal such as, for example, an O-ring (23,25) that is fitted in the ring-formed recesses in the inner wall of the pipe.

35 15. Device according to any of the preceding claims, characterised in that the separate section is divided into two part sections (52,54) each containing an explosive charge (56,58).

16. Device according to any of the preceding claims, characterised in that the plug housing comprises a permanently situated "No-Go" shoulder in the form of a ring-formed inwardly facing fold or "shelf" (40) in the pipe to be able to simply place mechanical plugs to carry out testing or safeguarding of the well later.

17. Device according to any of the preceding claims, characterised in that the glass is hardened in a way that makes it crushable, also by mechanical crushing, at the same time as it retains its strength as the hardening is preferably by heat treatment of the glass.

18. Device according to any of the preceding claims, characterised in that the pipe section/housing or the glass holder is shaped with an venting hole (36) to simplify the installation of the glass discs.

19. Device according to any of the preceding claims, characterised in that the hole 36 is used for pressure balancing to reduce the pressure load on the plug.

20. Device according to any of the preceding claims, characterised in that the recess for the glass is made so that one can easily drive equipment through after the glass plug is removed such that corners and form are shaped such that tools do not get stuck.

21. Device according to any of the preceding claims, characterised in that the recess 14 for the glass can be used for suspending plugs or other equipment after the glass has been removed, for example, in later well operations.

22. Device according to any of the preceding claims, characterised in that the recess 14 for the glass and the area around is formed so that one can suspend plugs or other equipment in the same recess and establish both anchorage and sealing in this area at later well operations.

23. Device for a pipe section for taking up a plug, characterised in that it is formed as described in the above mentioned claims.

24. Device according to claim 23, characterised in that the plug housing comprises a permanent situated "No-Go" shoulder in the form of a ring-formed inwardly facing fold or "shelf" (40) in the pipe, to make it simple to place mechanical plugs to carry out testing or safeguarding of the well later.

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25. Device according to any of the preceding claims 23-24, characterised in that the recess 14 for the glass and also the shoulder section 46 is used to suspend plugs or other equipment after the glass is removed, for example, at later well operations.

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26. Device according to any of the preceding claims 23-25, characterised in that the recess 14 for the glass and also the shoulder section 46 and the area around is formed so that one can suspend plugs or other equipment in the same recess and establish both anchorage and sealing in this area for later well operations.

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